INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/09772

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : C12N 9/10
US CL : 435/193
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 435/193

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
SEQ ID NO: 1

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GenEMBL Data Base Acc#HSU4023 (BRUZZANITI et al) 28-MAR-1996.	1 and 17
X	GenSeq Data Base Acc#AAM47440 (DOI et al) 13-SEP-2001	1 and 17
X	GenEMBL Data Base Acc#HSU33849 (MEERABUX et al) 28-JUN-1996.	1 and 17

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
24 November 2004 (24.11.2004)

Date of mailing of the international search report
10 DEC 2004

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Form PCT/ISA/210 (second sheet) (July 1998)

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Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1, 2, 17, and 18, in part, and 56; SEQ ID NO: 1.

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

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BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

. Claims 1, 2, 17, 18, and 56-126, drawn to a protein modification or maintenance polypeptide.
II. Claims 8, in part, 3-7, 9, 10, 12, 13, and 127-197, drawn to a polynucleotide encoding a protein modification or maintenance polypeptide, vectors, host cells, and methods of making the polypeptide.
III. Claims 11, 31, 32, 34, 37, 38, and 40-43 drawn to an antibody to a protein modification or maintenance polypeptide.
IV. Claims 28, in part, 14, 15, and 29, drawn to a method of detecting, by hybridization, a polynucleotide encoding a protein modification or maintenance polypeptide.
V. Claims 28, in part, 16, drawn to a method of detecting, by amplification, a polynucleotide encoding a protein modification or maintenance polypeptide.
VI. Claim 19, drawn to a method of treatment using a protein modification or maintenance polypeptide.
VII. Claims 20, 23, and 27, drawn to a method of screening for a modulator of a protein modification or maintenance polypeptide.
VIII. Claim 21, drawn to an agonist of a protein modification or maintenance polypeptide.
IX. Claim 22, drawn to a method of treatment using an agonist of a protein modification or maintenance polypeptide.
X. Claim 24, drawn to an antagonist of a protein modification or maintenance polypeptide.
XI. Claim 25, drawn to a method of treatment using an antagonist of a protein modification or maintenance polypeptide.
XII. Claim 26, drawn to a method of screening for a compound that binds to a protein modification or maintenance polypeptide.
XIII. Claims 44, in part, 30, drawn to a method to detect a protein modification or maintenance polypeptide in vitro.
XIV. Claims 44, in part, 33 and 35, drawn to a method to detect a protein modification or maintenance polypeptide in vivo.
XV. Claim 36, drawn to a method of making a polyclonal antibody to a protein modification or maintenance polypeptide.
XVI. Claim 39, drawn to a method of making a monoclonal antibody to a protein modification or maintenance polypeptide.
XVII. Claim 45, drawn to a method of purifying a protein modification or maintenance polypeptide.
XVIII. Claim 46 and 48-55, drawn to a microarray comprising a polynucleotide encoding a protein modification or maintenance polypeptide.
XIX. Claim 47, drawn to a method for generating an expression profile using a microarray comprising polynucleotides.
XX. Claim 8, in part, drawn to a transgenic animal.

For each of inventions I-XX above, restriction to one of the following is also required. Therefore, election is required of one of inventions I- XX and one of inventions (A)-(OOO).

(A)-(L): SEQ ID NO: 1-12 or a sequence encoding SEQ ID NO: 1-12, respectively.
(M)-(TT): SEQ ID NO: 14-49 or a sequence encoding SEQ ID NO: 14-49, respectively.
(UU)-(OOO): SEQ ID NO: 51-71 or a sequence encoding SEQ ID NO: 51-71, respectively.

The inventions listed as Groups I-XX and (A)-(OOO) do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical feature for the following reasons: The technical feature linking Groups I-XX and (A)-(OOO) appears to be that they all relate to protein modification or maintenance polypeptides. However, Stryer et al, 1995 (In: Biochemistry 4th ed. W.H. Freeman and Co., New York) teach that protein kinases are protein modification polypeptides that modify proteins by phosphorylation. Therefore Groups I-XX and (A)-(OOO) share no special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art. Furthermore, the products of Groups I-III, VIII, X, XVIII, XX, and (A)-(OOO) do not share a special common structural or functional feature while, the methods of Groups IV-VII, IX, XI-XVIII, and XIX do not use the same reagents or produce the same results. In addition, the methods of Groups IV-VII, IX, XI-XVIII, and XIX not do comprise all of the methods for making or using the products of Groups I-III, VIII, X, XVIII, XX, and (A)-(OOO). Accordingly, Groups I-XX and (A)-(OOO) are not so linked by the same or a corresponding special technical feature as to form a single general inventive concept.